

# ONUPHIDAE (ANNELIDA: POLYCHAETA) FROM SOUTHEASTERN BRAZIL

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## ABSTRACT

Fourteen species of Onuphidae have been identified from estuarine and offshore environments along the southeast coast of Brazil: *Nothria benthophyla* n. sp., *Hyalinoecia juvenalis* Moore, 1911; *Diopatra viridis* Kinberg, 1865, *Diopatra tridentata* Hartman, 1944, *Brevibrachium hanneloreae* sp. n., *Rhamphobranchium verngreni* (Kinberg, 1865), *Australonuphis casamiquelorum* (Orensanz, 1974), *Kinbergonuphis fauchaldi* sp. n., *Kinbergonuphis nonato* sp. n., *Kinbergonuphis orensanzii* (Fauchald, 1982), *Kinbergonuphis difficilis* (Fauchald, 1982), *Mooreonuphis lineata* sp. n., *Mooreonuphis intermedia* (Kinberg, 1865) and *Onuphis eremita oculata* Hartman, 1951. Descriptions and differential diagnoses are given for all new species.

Onuphid polychaetes from Brazil have been studied by a number of authors, including Kinberg (1865; 1858), Hansen (1882), Augener (1931; 1934), Hartman (1949), Nonato and Luna (1970), Orensanz (1974), Orensanz and Gianuca (1974), Rullier and Amoureux (1979), Temperini (1981),<sup>1</sup> Nonato<sup>2</sup> (1981), Fauchald (1982b), Lana (1984)<sup>3</sup> and Morgado (1986). About 25 species are currently recognized from Brazilian waters; unfortunately, most of them were recorded in unpublished theses or abstracts and need to be reviewed, together with the taxa described before the recent revisionary works of Fauchald (1982b) and Paxton (1986a; 1986b).

This paper describes the onuphid fauna from the southeastern coast of Brazil. The study is based on collections taken from offshore and estuarine environments between 23°S and 29°S, during the Operations Sueste I to IV, carried out by the R/V ALMIRANTE SALDANHA, from the Brazilian Navy. The material previously studied by Lana (1984),<sup>2</sup> in an unpublished thesis, is by and large the same reported here. All specimens were collected by the author unless otherwise stated. Generic definitions and terminology are as defined in Paxton (1986a). Most of the material, including holotypes and some of the paratypes, is deposited in the collections of the Centro de Biologia Marinha, Universidade Federal do Paraná (MCBM-BPO); paratypes also have been deposited in the National Museum of Natural History, Smithsonian Institution (USNM).

## Family ONUPHIDAE Kinberg, 1865

### *Nothria benthophyla* new species

#### Figure 1a–m

*Nothria benthophyla* Temperini, 1981:<sup>1</sup> 32, figs. 62–72; Lana, 1984:<sup>2</sup> 150, figs. 146–156 [in manuscript, not valid within the meaning of the International Code of Zoological Nomenclature].

**Material Examined.**—CONTINENTAL SHELF (Operation Sueste II): St. 6289, 24°14'0"S, 45°56'1"W, 31 May 1983, 51 m, mud with shells (MCBM-BPO-394, 1); St. 2265 (Project FAUNEC), 29°3'S, 48°0'W, 17 June 1975, 183 m, mud (Benthos collection, Department of Biological Oceanography, Instituto Oceanográfico, Universidade de São Paulo, holotype). Project Ubatuba, off São Paulo State coast: St. 11, 23°30'S, 43°4'W, 20 Jan 1986, 36 m, fine sand (BC-DBO, 1); St. 16, 23°38'S, 44°49'W,

<sup>1</sup> Temperini, M. T. 1981. Sistemática e distribuição dos poliquetos errantes da plataforma continental entre as latitudes de 23°05'S e 30°00'S. M.Sc. thesis, Oceanographic Institute, University of São Paulo. 89 pp., unpublished.

<sup>2</sup> Nonato, E. F. 1981. Contribuição ao conhecimento dos anelídeos poliquetas bentônicos da plataforma continental brasileira, entre Cabo Frio e Arroio Chuí. Thesis, Oceanographic Institute, University of São Paulo, 246 pp., unpublished.

<sup>3</sup> Lana, P. C. 1984. Anelídeos poliquetas errantes do litoral do Estado do Paraná. D.Sc. thesis, Oceanographic Institute, University of São Paulo. 275 pp., unpublished.

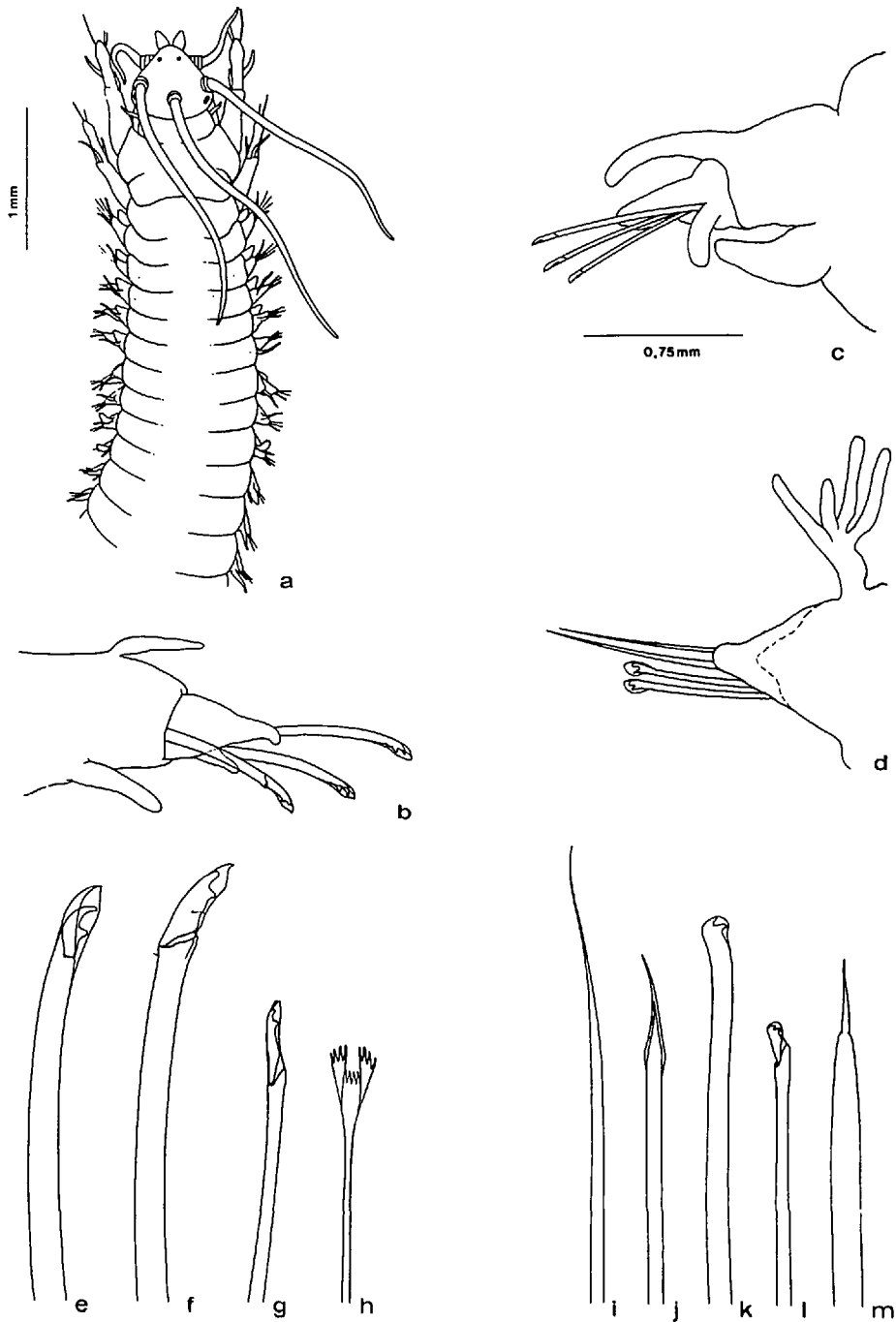


Figure 1. *Nothria benthophyla* sp. n. a, anterior end, dorsal view; b, parapodium 1, posterior view; c, parapodium 2, anterior view; d, parapodium 20, posterior view; e, bidentate hook; f, pseudocompound bidentate hook; g, bidentate falciger; h, scoop-shaped pectinate seta; i, simple seta; j, limbate seta; k, subacicular hook; l, compound bidentate falciger, posterior parapodium; m, projecting acicula.

22 Jan 1986, 47 m, fine sand (BC-DBO, 1); St. 20, 23°40'S, 44°59'W, 20 April 1986, 35 m, fine sand (BC-DBO, 1); St. 22, 23°50'S, 45°10'W, 19 April 1986, 40 m, fine sand (BC-DBO, 1).

**Diagnosis.**—Two pairs of prostomial eyespots; pseudocompound bidentate hooks in the first 3 setigers; additional simple bidentate hooks in setiger 1; subacicular hooks from setiger 9; branchiae present from setiger 8 or 9, first as single, double or triple filaments and palmate on following setigers, with up to four to five filaments; cirriform postsetal lobes limited to first 11 setigers.

**Description.**—The holotype is a complete specimen, measuring 6 mm in length; an anterior fragment (St. 6289) measures 8.6 mm in length and 1 mm in width for 26 setigers. Body whitish in alcohol, with brownish pigmentation on dorso-lateral portions of median and posterior segments. Prostomium rounded; anterior antennae placed forward, in ventral position; ceratophores with four rings; longest ceratostyle (median) to setigers 7–8, posterior lateral ones to setiger 5. Frontal palps ovoid. A pair of small anterior eyespots and a pair of larger eyespots near the base of posterior lateral antennae (Fig. 1a). Peristomium with one pair of cirriform tentacular cirri set far apart.

Branchiae from setigers 8–9, first present as simple, double or rarely triple filaments and palmate, with up to four to five filaments, by setiger 10 (Fig. 1e, f).

First 2 setigers large and anteriorly directed (Fig. 1a), with large auricular presetal lobes and subulate postsetal ones (Fig. 1b, c); auricles reduced in setiger 3 and following ones, absent from setiger 10 onwards; postsetal lobes cirriform in first 11 setigers, absent from setiger 12 onwards (Fig. 1d). Dorsal cirri subulate throughout the body, but shorter in median and posterior setigers; ventral cirri subulate in the first 2 setigers, conical in setiger 3 and cushion-shaped in following ones.

Simple bidentate (Fig. 1e) and pseudocompound bidentate hooded hooks (Fig. 1f) in setiger 1. Slender falciger-like pseudocompound hooks in setigers 2–3 (Fig. 1g). Scoop-shaped (Fig. 1h), simple (Fig. 1i) and limbate setae (Fig. 1j) from setiger 3. Subacicular hooks (Fig. 1k) from setigers 9–10. Compound bidentate falcigers (Fig. 1l) and projecting acicula (Fig. 1m) in posterior setigers.

Maxillae not examined. Pygidium with two filiform anal cirri.

**Etymology.**—The name *benthophyla*, first proposed by Temperini (1981)<sup>1</sup>, was prompted by the provenance of type-material, collected from continental slope bottoms.

**Remarks.**—Temperini (pers. comm.) has kindly allowed me to present a formal description of the material studied and illustrated by her in an unpublished thesis (1981)<sup>1</sup>. Her former description was emended and enlarged by me in another unpublished thesis (Lana, 1984)<sup>3</sup> through the examination of type-material and one additional specimen collected off São Paulo State coast (Operation Sueste II, St. 6289). The present description, based upon a larger collection, validates the name *benthophyla* and avoids the further usage of a manuscript name formerly utilized in theses which do not constitute publications within the meaning of the International Code of Zoological Nomenclature. The holotype, presently deposited in the Benthos collection of the Department of Biological Oceanography (Instituto Oceanográfico, Universidade de São Paulo), was not available for re-examination in July 1989.

The presence of palmate branchiae was overlooked by Temperini (1981)<sup>1</sup> in her manuscript description. Provisional compound setae in posterior setigers are probably the precursor setae for the subacicular hooks, as previously suggested by Paxton (1986a) for other onuphid genera.

*Nothria* sp. A, described from the northern Gulf of Mexico by Gathof (1984), is probably identical to *N. benthophyla* n. sp.; a minor difference between them

is that in *Nothria* sp. A subacicular hooks begin on setiger 7, rather than on setigers 9–10. However, it is well known that there is a size dependent variation in the origin of subacicular hooks (Paxton, 1986a).

*Hyalinoecia juvenalis* Moore, 1911

*Hyalinoecia juvenalis* Moore, 1911: 277, pl. 18, figs. 86–95; Fauchald, 1968: 14, pl. 3, figs. a–e; Hartman, 1968: 667, figs. 1–6; Fauchald, 1972: 118; Nonato, 1981:<sup>2</sup> 117; Lana, 1984:<sup>3</sup> 140, figs. 136, 137.

*Material Examined*.—CONTINENTAL SHELF (Operation Sueste II): St. 6230, 27°22'9"S, 47°25'7"W, 15 May 1983, 133 m, silty sand with shells (MCBM-BPO-369, 3); St. 6287, 24°38'4"S, 45°9'0"W, 31 May 1983, 88 m, silty sand (MCBM-BPO-370, 2; USNM 97803, 2).

*Remarks*.—*Hyalinoecia juvenalis* is known from shelf depths off southern California, Western Mexico and the West Indies. It is very close to *H. tubicola* (Muller, 1788), from which it differs in having lateral antennae with stout and clavate styles and a much smaller body size. Orensanz (1974), Rullier and Amoureux (1979) and Temperini (1981)<sup>1</sup> referred a number of specimens collected off the southeast Brazilian and Argentinean coasts to *H. tubicola*. All this material is in need of revision.

*Diopatra viridis* Kinberg, 1865

*Diopatra viridis* Kinberg, 1865: 559; Kinberg, 1858: 38, pl. 3, fig. 2A–G; Orensanz, 1974: 104, pl. 10, figs. 1–10.

*Diopatra cuprea*.—Lana, 1984:<sup>3</sup> 142, figs. 138–140 [non Bosc, 1802].

*Material Examined*.—BAY OF PARANAGUA: St. A-3, Cotinga Island, 7 Nov 1981, 6 m, silty sand (MCBM-BPO-371, 3); St. C-11, Itiberê River, 26 May 1982, 4.5 m, silty sand (MCBM-BPO-372, 30); St. D-1, Ponta da Cruz, 28 May 1982, 10 m, silty sand (MCBM-BPO-373, 1); St. D-9, Ponta do Poço, 28 May 1982, 10 m, silty sand (MCBM-BPO-374, 1); St. D-10, Ponta do Maciel, 28 May 1982, 18 m, silty sand with shells (MCBM-BPO-375, 1); St. D-14, Itiberê River, 28 May 1982, 5 m, silty sand (MCBM-BPO-376, 1); St. E-10, Laranjeiras Bay, 14 Dec 1983, 4 m, silty sand (MCBM-BPO-377, 6).

*Remarks*.—Although the genus *Diopatra* is well defined, the taxonomy is not clear at the specific level, as pointed out by Paxton (1986a). A revision of the genus is underway (Paxton, in prep.). As suggested by Orensanz (1974), Kinberg's species need to be provisionally kept to designate populations close to the complex *cuprea* from southeast Brazil and Argentina, until completion of a revision of material from all parts of its range.

*Diopatra tridentata* Hartman, 1944

*Diopatra tridentata* Hartman, 1944: 61, pl. 2, figs. 37–43 and pl. 17, figs. 335, 336; Nonato and Luna, 1970: 75; Gardiner, 1975: 185, fig. 23j–n; Rullier and Amoureux, 1979: 175; Temperini, 1981:<sup>1</sup> 30; Lana, 1984:<sup>2</sup> 144, figs. 141, 142; Gathof, 1984: 39–11, figs. 39–7, 8a–i.

*Material Examined*.—CONTINENTAL SHELF (Operations Sueste I and II): St. 6077, 26°44'0"S, 48°25'8"W, 2 Aug 1982, 39 m, silty sand (MCBM-BPO-383, 2); St. 6089, 26°22'1"S, 48°19'8"W, 5 Aug 1982, 51 m, silty sand (MCBM-BPO-392, 1); St. 6105, 25°38'8"S, 47°30'2"W, 8 Aug 1982, 52 m, silty sand (MCBM-BPO-393, 1); St. 6111, 25°29'4"S, 46°44'4"W, 15 Aug 1982, 78 m, silty sand (MCBM-BPO-389, 1); St. 6121, 25°4'4"S, 46°25'8"W, 17 Aug 1982, 66 m, muddy sand (MCBM-BPO-390, 2); St. 6127, 24°44'3"S, 45°55'0"W, 18 Aug 1982, 68 m, silty sand (MCBM-BPO-385, 4; USNM 97802, 2); St. 6138, 24°24'0"S, 45°34'0"W, 20 Aug 1982, 65 m, silty sand (MCBM-BPO-387, 5); St. 6238, 26°33'0"S, 47°40'2"W, 17 May 1983, 75 m, silty sand with shells (MCBM-BPO-381, 4); St. 6244, 25°55'4"S, 47°52'3"W, 17 May 1983, 50 m, silty sand (MCBM-BPO-382, 6); St. 6254, 25°48'9"S, 47°10'6"W, 20 May 1983, 71 m, mud (MCBM-BPO-386, 2); St. 6288, 24°23'9"S, 45°32'8"W, 31 May 1983, 66 m, mud with shells (MCBM-BPO-379, 19); St. 6289, 24°14'0"S, 45°56'1"W, 31 May 1983, 51 m, mud with shells (MCBM-BPO-391, 2).

*Remarks.* — *Diopatra tridentata* can be easily recognized by the annulated structure of its tube. It is very close, if not identical, to *D. brasiliensis* Kinberg, 1865. In view of the close similarity between them, a careful examination of material from the Caribbean and the South American Atlantic coast should be undertaken.

***Brevibrachium hanneloreae* new species**

Figure 2a–m

*Rhamphobrachium* cf. *agassizii*. — Lana, 1984:<sup>3</sup> 148 [not Ehlers, 1887].

*Material Examined.* — CONTINENTAL SHELF (Operation Sueste II): St. 6237, 26°49'4"S, 47°9'8"W, 17 May 1983, 137 m, silty sand (MCBM-BPO-367, 1 paratype); St. 6288, 24°23'9"S, 45°32'8"W, 31 May 1983, 66 m, silty sand (MCBM-BPO-368, holotype).

*Diagnosis.* — Anterior 3 setigers modified; setiger 4 transitional; branchiae as double filaments from setiger 19, reaching maximum of 5 filaments on median setigers; unidentate spiny hooks without hoods on modified setigers; subacicular hooks from setiger 11.

*Description.* — The holotype is a complete specimen, broken in two pieces, measuring 52 mm in length and 3 mm in width for 106 setigers; the paratype is an anterior fragment, with 24 mm for 70 setigers. Body whitish in alcohol, without any pigment marks. Prostomium anteriorly rounded; all antennae inserted on same level at anterior part of prostomium; ceratophores with 3–4 proximal rings and slightly longer distal rings, styles short to setiger 1 (Fig. 2a, b). Frontal and labial palps rectangular in shape and medially separated. No eyespots visible. Tentacular cirri inserted far apart, reaching distal end of ceratophores of lateral antennae.

Anterior 3 setigers modified (Fig. 2c), with rounded acicular lobes and two subulate postsetal lobes, with superior twice as long as the accessory lower one (Fig. 2a). Dorsal cirri large and subulate on modified setigers, thereafter decreasing in size. Ventral cirri subulate on anterior 4 setigers, conical on setiger 5 and replaced by pad-shaped glands from setiger 6 (Fig. 1a). Setiger 4 transitional, with subulate longer postsetal lobe, shorter postsetal lobe inconspicuous (Fig. 2d). Rounded presetal lobes and digitate postsetal lobes on following setigers (Fig. 2e, f); both setal lobes low and rounded on median and posterior setigers (Fig. 2g, h).

Branchiae as double filaments from setiger 19, reaching maximum of 4–5 filaments on median setigers (Fig. 2h), shorter towards posterior region and present as single filaments to the end of the body.

Modified setigers with about 10 unidentate simple hooks, distally curved, with an irregular row of very faint spines along inner edge (Fig. 2i). Tips of aciculae projecting slightly from setal lobes of anterior parapodia. Setiger 4 with modified hooded setae, some of them with bidentate tips (Fig. 2j). Simple limbate setae from setiger 5, upper bundle longer, with delicate tips, and lower bundle shorter, with weak wings, some of them looking distorted (Fig. 2k). Pectinate setae (oblique comb with 20–30 teeth) from setigers 9–10, usually longer than limbate setae (Fig. 2l). Two heavy bidentate subacicular hooks, with hoods on anterior edge, from setigers 11–12 (Fig. 2m).

Maxillae yellowish, weakly sclerotized. Maxillary formula: Mx I = 1+1; Mx II = 8+7; Mx III = 8+0; Mx IV = 7+8; Mx V = 1+1.

Pygidium rounded lobe, with dorsal anus; dorsal pair of anal cirri twice as long as ventral pair.

Tube black and fragile, round in transverse section, consisting of a 1 mm-thick layer of sand grains and mud, without any attached debris or coarse particles.

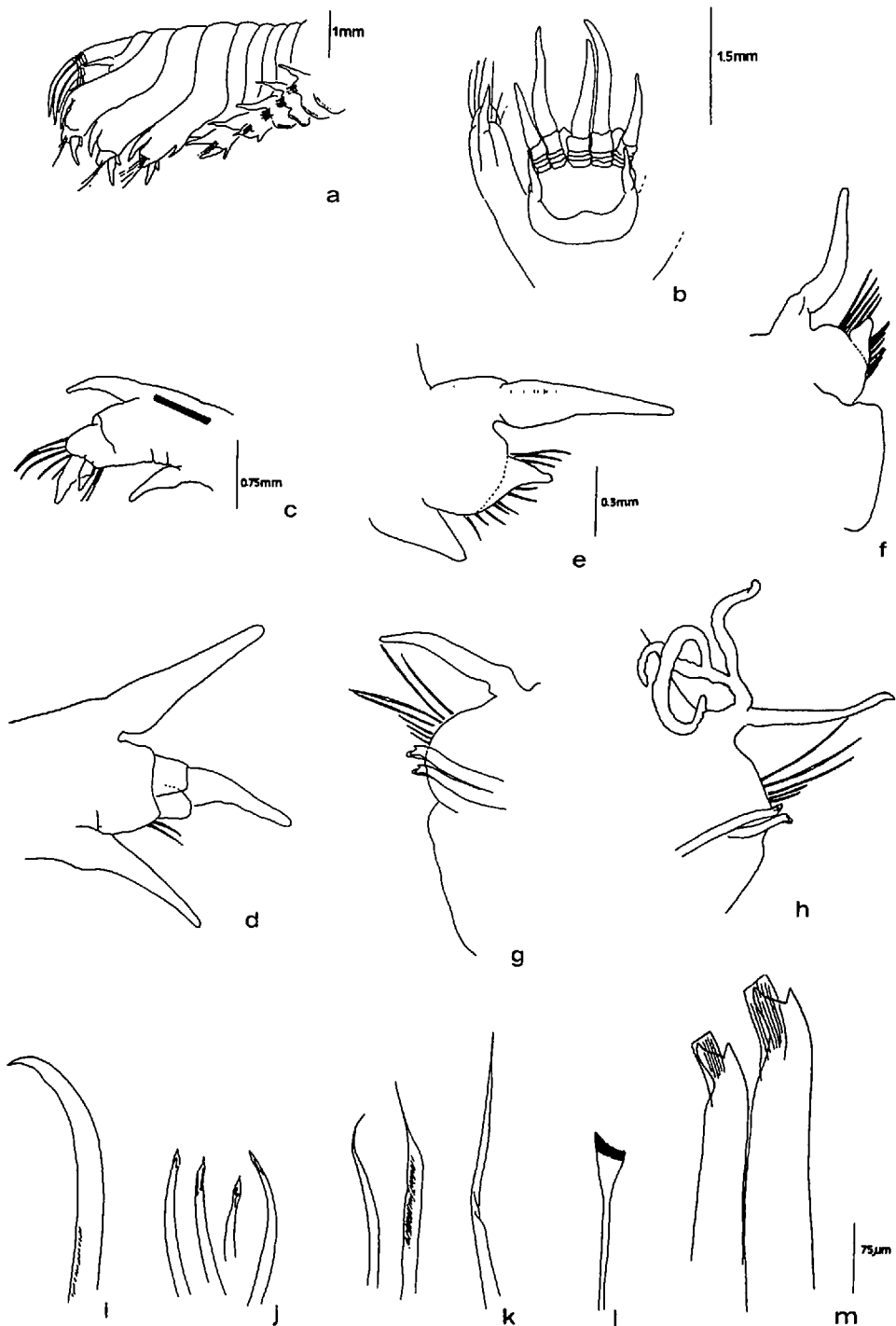


Figure 2. *Brevibrachium hanneloreae* n. sp. a, anterior end, lateral view; b, anterior end, dorsal view; c, parapodium 1, anterior view; d, parapodium 4, anterior view; e, parapodium 5, posterior view; f, parapodium 8, posterior view; g, parapodium 15, posterior view; h, parapodium 30, posterior view; i, unidentate simple hook; j, modified hooded setae, parapodium 4; k, limbate setae; l, pectinate seta; m, subacicular hooks.

*Etymology.*—The new species is named in honor of Dr. Hannelore Paxton who has contributed so much to the present knowledge of the *Rhamphobrachium* complex.

*Remarks.*—*Brevibrachium hanneloreae* n. sp. resembles *B. maculatum* (Estcourt, 1966), from Australia and New Zealand, in that these two have only 3 modified parapodia and unidentate anterior hooks, distally recurved and without hoods. *B. hanneloreae* differs from *B. maculatum* in that branchiae are already present as double filaments from setiger 19, reaching maximum of 4–5 filaments on median setigers. *B. hanneloreae* differs further from *B. maculatum* in having longer dorsal cirri and postsetal lobes on modified setigers. The two other species of the genus, *B. augeneri* Paxton, 1986 and *B. capense* (Day, 1960) have 4 anterior modified setigers, with dentate hooded hooks. The new species was erroneously referred to *Rhamphobrachium agassizii* Ehlers, 1887, known from Florida and Puerto Rico, in a previous work (Lana, 1984)<sup>2</sup>.

*Rhamphobrachium (Spinigerium) verngreni* (Kinberg, 1865)

*Onuphis verngreni* Kinberg, 1865: 560; Kinberg, 1858: 39, pl. 14, fig. 8.

*Rhamphobrachium verngreni.*—Augener, 1931: 295, fig. 4; Orensanz, 1974: 109, pl. 11, figs. 1–13; Rullier and Amoureux, 1979: 176; Nonato, 1981:<sup>2</sup> 122, figs. 153–157; Lana, 1984:<sup>3</sup> 146, figs. 143, 144.

*Rhamphobrachium (Spinigerium) verngreni.*—Paxton, 1986b: 99, fig. 16a–e.

*Material Examined.*—CONTINENTAL SHELF (Operation Sueste II): St. 6287, 24°38'4"S, 45°9'0"W, 31 May 1983, 88 m (MCBM-BPO-366, 3); Operation Geocosta Rio II: St. D-5, 23°10'S, 43°20'W, 25 March 1986 (MCBM-BPO-432, 7); St. D-6, 23°10'S, 43°20'W, 25 March 1986 (MCBM-BPO-433, 1).

*Australonuphis casamiquelorum* (Orensanz, 1974)

*Americonuphis casamiquelorum* Orensanz, 1974: 100, pl. 9, figs. 1–14.

*Australonuphis casamiquelorum.*—Paxton, 1979: 270.

*Material Examined.*—PARANÁ STATE: Shangri-Lá Beach (Paranaguá), 28°38'S, 48°30'W, 29 July 1985, in gut content of *Menticirrhus littoralis*, M. F. Corrêa, col. (MCBM-BPO-429, 1); Barrancos Beach, 28°37'30"S, 48°29'30"W, 10 Sep 1987, midlittoral, fine sand, J. R. Botelho, col. (MCBM-BPO-430, 3).

*Remarks.*—The examined specimens agree well with Orensanz's description and illustrations (1974). The present finds constitute a significant range extension to the north; the species was previously known from Cassino, Brazil (32°S) to San Matías Gulf, Argentina (42°S).

*Kinbergonuphis fauchaldi* new species

Figure 3a–k

*Material Examined.*—CONTINENTAL SHELF (Operations Sueste I and II): St. 6089, 26°22'1"S, 48°19'8"W, 5 Aug 1982, 51 m, silty sand (MCBM-BPO-413, holotype); St. 6244, 25°55'4"S, 47°52'0"W, 17 May 1983, 50 m, silty sand (MCBM-BPO-414, 1 paratype; USNM 97812, 2 paratypes).

*Diagnosis.*—Pseudocompound tridentate hooks in the first 4 setigers; large median hooks from setiger 4 to setiger 7; subacicular hooks from setiger 13; branchiae from setigers 7–8, first as single filaments, reaching up to 3 filaments on median setigers, and absent on last 15–20 setigers; ventral cirri cirriform in the first 6 setigers.

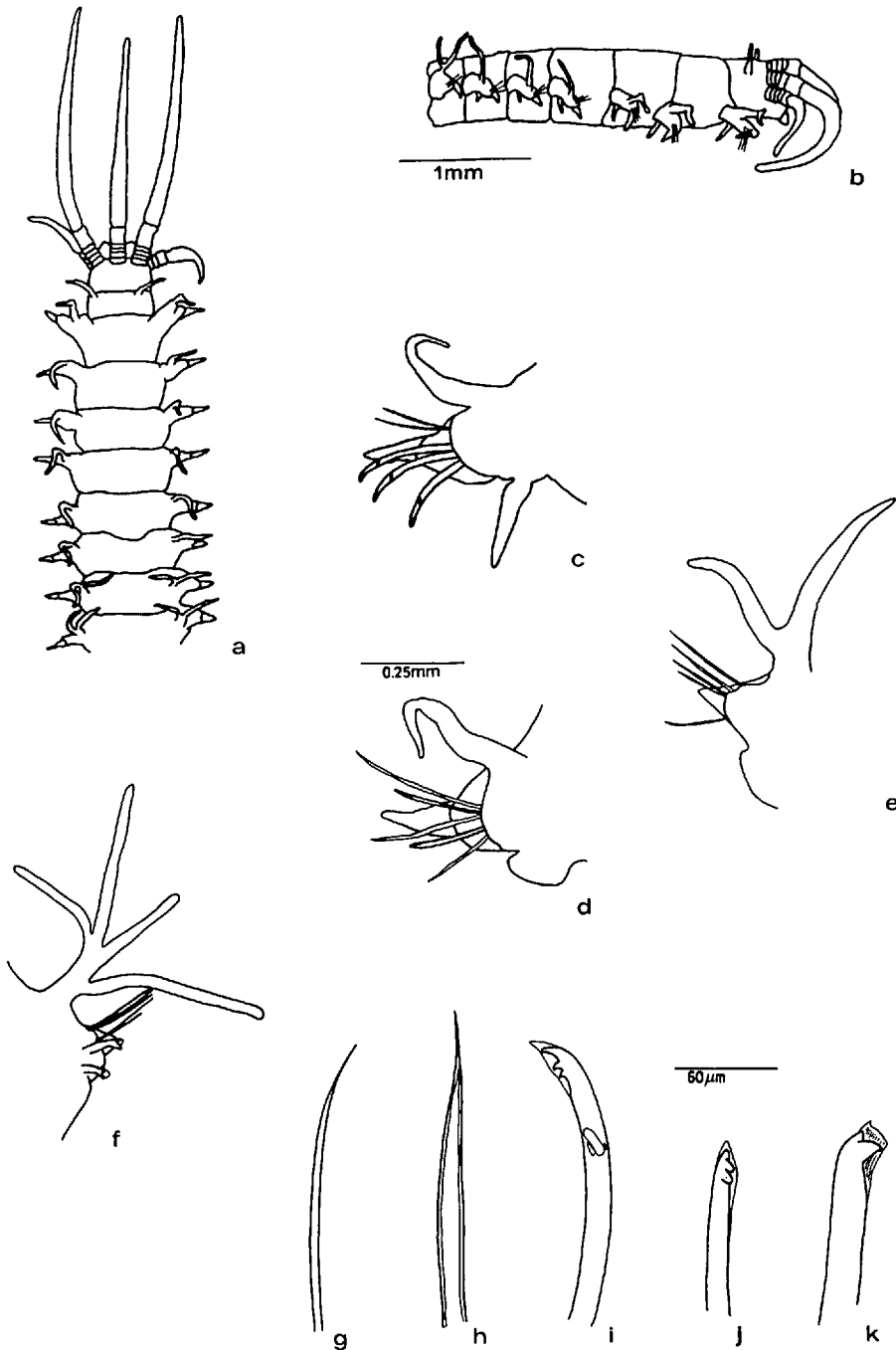


Figure 3. *Kinbergonuphis fauchaldi* sp. n. a, anterior end, dorsal view; b, anterior end, lateral view; c, parapodium 1, anterior view; d, parapodium 7, anterior view; e, parapodium 12, anterior view; f, parapodium 20, anterior view; g, simple seta, parapodium 1; h, limbate seta, parapodium 1; i, pseudocompound tridentate hook; j, large median hook; k, subacicular hook.



**Description.**—The holotype is a complete specimen with 165 setigers, 30 mm long and 0.8 mm wide. Anterior end iridescent, with dorsal and ventral transverse bands of dark pigmentation, as preserved in alcohol. Prostomium with two pairs of small eyespots. Antennae placed forward, ceratophores with four indistinct rings; ceratostyles of posterior lateral antennae reaching setiger 5 (Fig. 3a). Peristomial cirri short and slender, reaching the base of posterior lateral antennae (Fig. 3b).

Branchiae from setigers 7–8, first as single filaments (Fig. 3e), reaching up to three filaments on median setigers (Fig. 3f), and absent on last 15–20 setigers.

Anterior setigers with rounded presetal lobes and cirriform postsetal ones; dorsal cirri about twice as long as ventral cirri (Fig. 3c, d). Ventral cirri cirriform in the first 6 setigers (Fig. 3b, c); postsetal lobes cirriform in the first 12–14 setigers (Fig. 3 c–e).

Simple capillary setae (Fig. 3g), limbate setae (Fig. 3h) and pseudocompound tridentate hooks (Fig. 3i) present in the first 4 setigers. Limbate setae less numerous in median and posterior setigers. Distal tooth of pseudocompound hooks short, not projecting beyond the edge of the hood. Large median tridentate hooks (Fig. 3j) present in setigers 4–7, with blunt teeth. Pectinate setae with curved distal edges. Bidentate subacicular hooks (Fig. 3k) first present in setiger 13.

Maxillae not examined. Tubes fragile, with an inner lining covered by silt and clay particles.

**Etymology.**—The species is named after Dr. Kristian Fauchald, who described and reviewed the genus *Kinbergonuphis*.

**Remarks.**—The present description validates the name *fauchaldi* first proposed in an unpublished thesis (Lana, 1984)<sup>2</sup>. *Kinbergonuphis fauchaldi* sp. n. differs from most of its congeners in having branchiae from setigers 7–8, first as single filaments, but later ramified, with up to three filaments. At least three other species of *Kinbergonuphis* have been reported from the Brazilian southeast coast: *K. orensanzi* (Fauchald, 1982), *K. difficilis* (Fauchald, 1982) and *K. nonatoi* n. sp., described and illustrated below. In *K. orensanzi*, branchiae are always present from setiger 6; they are absent in posterior setigers. *K. difficilis* has pseudocompound tridentate hooks in the first 5 setigers and branchiae as double filaments from setiger 6, reaching up to five filaments where best developed.

### *Kinbergonuphis nonatoi* new species

Figure 4a–l

**Material Examined.**—CONTINENTAL SHELF (Operations Sueste I and II): St. 6079, 27°3'5"S, 47°54'8"W, 2 Aug 1982, 84 m, mud (MCBM-BPO-411, holotype; USNM 97813, 1 paratype); St. 6288, 24°23'9"S, 45°32'8"W, 31 May 1983, 66 m, mud with shells (MCBM-BPO-412, 2 paratypes).

**Diagnosis.**—Pseudocompound tridentate hooks in the first 5 setigers; large median hooks from setiger 6 to setigers 21–22; subacicular hooks from setigers 22–23; branchiae from setigers 7–8, first as single filaments, and pectinate (with up to 6 filaments) in median setigers; ventral cirri cirriform in the first 6–8 setigers.

**Description.**—The holotype is an anterior fragment, 70 mm in length and 1.88 mm in width for 114 setigers. Dorsal median portions of anterior setigers with reddish transverse bands of pigmentation; intersegmental grooves lack pigment, as preserved in alcohol. Prostomium anteriorly rounded, without evident eyespots. Antennae displaced forward; ceratophores with about 5 basal rings; ceratostyles of lateral posterior antennae longest, reaching setiger 11 (Fig. 4a); ceratostyles of

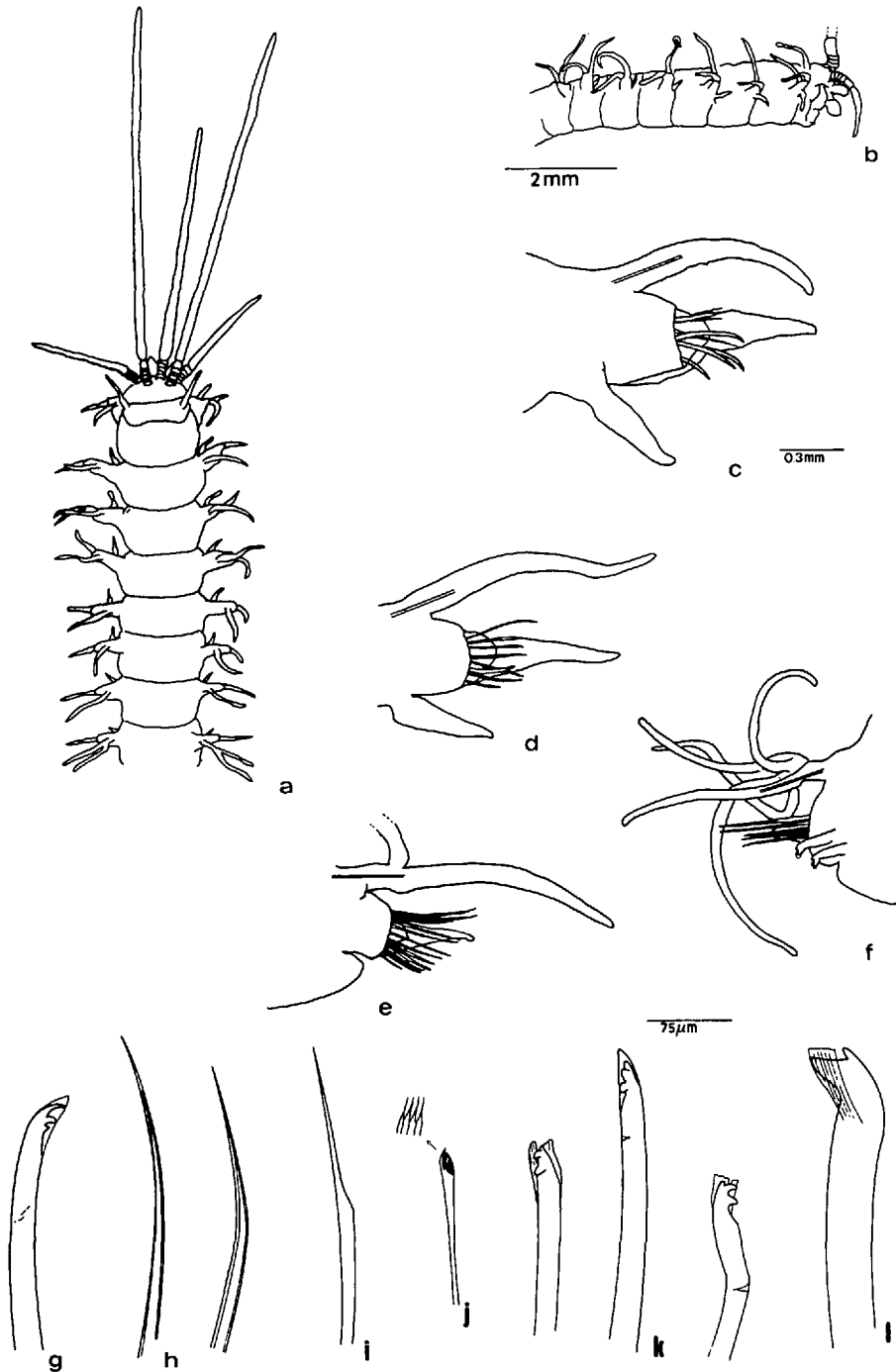


Figure 4. *Kinbergonuphis nonatoi* n. sp. a, anterior end, dorsal view; b, anterior end, lateral view; c, parapodium 1, anterior view; d, parapodium 6, anterior view; e, parapodium 10, anterior view; f, parapodium 30, anterior view; g, pseudocompound tridentate hook; h, limbate seta; i, projecting acicula; j, pectinate seta; k, large median hooks; l, subacicular hook.

lateral antennae short, reaching setiger 2. Tentacular cirri long and filiform, reaching base of ceratostyles.

Branchiae first present from setigers 7–8 (Fig. 4a, e), first as single filaments and later pectinate, with up to five filaments, in median and posterior setigers (Fig. 4f).

Dorsal cirri long and cirriform, best developed in anterior and median setigers; ventral cirri cirriform in the first 6–8 setigers (Fig. 4a, b). Postsetal lobes cirriform in the first 15 setigers (Fig. 4c–e), shorter and rounded in median setigers (Fig. 4f) and reduced in posterior ones.

Pseudocompound tridentate hooks (Fig. 4g), an upper bundle of simple setae and three projecting aciculae (Fig. 4i) in the first 5 setigers. Setigers 6 to 21–22 with an upper bundle of longer limbate setae (Fig. 4h), one or two pectinate setae with about 10–15 teeth (Fig. 4j), three emerging aciculae, large median tridentate hooks with blunt teeth (Fig. 4k) and a lower bundle of shorter and finely serrated limbate setae. Bidentate subacicular hooks (Fig. 4l) first present from setigers 22–23. Median and posterior setigers with limbate and pectinate setae, besides the projecting aciculae and bidentate subacicular hooks.

Maxillae weakly sclerotized. Maxillary formula: Mx I = 1+1; Mx II = 9+9; Mx III = 8+0; Mx IV = 7+12; Mx V = 1+1.

Tube fragile, with an inner lining covered by a thin layer of sand and mud particles.

*Etymology.*—The species is named after Dr. Edmundo Nonato, whose works have added so much to the present knowledge of the Brazilian polychaete fauna.

*Remarks.*—The present description validates the name *nonatoi*, formerly proposed in an unpublished thesis (Lana, 1984)<sup>3</sup>. As in *K. fauchaldi* sp. n., described above, branchiae are first present as single filaments from setigers 7–8, but posteriorly reach up to 6 filaments. *K. nonatoi* differs from *K. difficilis* (Fauchald, 1982) in having about 15 large median hooks, and ceratophores with only 4 rings. It is very close to *K. simoni* (Santos, Day, and Rice, 1981), known from the Gulf of Mexico; however, the latter has a smaller body size, besides having subacicular hooks from more anterior setigers and less developed branchiae.

#### *Kinbergonuphis orensanzi* (Fauchald, 1982)

*Onuphis setosa.*—Orensanz, 1974: 89 [in part; not Kinberg, 1865].

*Onuphis (Onuphis) orensanzi* Fauchald, 1982a: 205, fig. 2.

*Kinbergonuphis orensanzi.*—Fauchald, 1982b: 27, fig. 8b; Lana, 1984:<sup>2</sup> 165, fig. 183.

*Material Examined.*—CONTINENTAL SHELF (Operations Sueste I and II): St. 6111, 25°29'4"S, 46°44'4"W, 15 Aug 1982, 78 m, silty sand (MCBM-BPO-415, 1); St. 6119A, 25°28'9"S, 45°40'8"W, 135 m, mud (MCBM-BPO-416, 30; USNM 97806, 10); St. 6119B, same (MCBM-BPO-417, 6); St. 6119C, same (MCBM-BPO-418, 5); St. 6127, 24°44'3"S, 45°55'0"W, 18 Aug 1982, 68 m, silty sand (MCBM-BPO-419, 2); St. 6138, 24°24'0"S, 45°34'0"W, 20 Aug 1982, 65 m, silty sand (MCBM-BPO-421, 3); St. 6288, 24°23'9"S, 45°32'8"W, 31 May 1983, 66 m, mud with shells (MCBM-BPO-423, 2).

#### *Kinbergonuphis difficilis* (Fauchald, 1982)

*Onuphis setosa.*—Orensanz, 1974: 89 [in part; not Kinberg, 1865].

*Onuphis (Onuphis) difficilis* Fauchald, 1982a: 203, fig. 1.

*Kinbergonuphis difficilis.*—Fauchald, 1982b: 18, fig. 8a; Lana, 1984:<sup>3</sup> 165, fig. 184.

*Material Examined.*—BAY OF PARANAGUÁ: Perequê River, Pontal do Sul, 17 Feb 1983, 1 m, fine sand (MCBM-BPO-424, 1); St. C-4, in front of Paranaguá Harbour, 26 May 1982, 13 m, silty sand (MCBM-BPO-425, 7; USNM 97804, 4); St. F-10, Laranjeiras Bay, at mouth of Guamandituba River, 16 Dec 1984, 5 m, silty sand (MCBM-BPO-426, 8; USNM 97805, 6). CONTINENTAL SHELF

(Operation Sueste II): St. 6256, 25°26'0"S, 47°55'0"W, 20 May 1983, 25 m, fine sand (MCBM-BPO-427, 1); St. 6289, 24°14'0"S, 45°56'1"W, 31 May 1983, 51 m, mud with shells (MCBM-BPO-428, 1).

*Mooreonuphis intermedia* (Kinberg, 1865)

*Onuphis intermedia* Kinberg, 1865: 560; Kinberg, 1858: 40, pl. 14, fig. 9.

non *Onuphis intermedia*.—Augener, 1931: 296, fig. 5.

*Onuphis (Nothria) intermedia*.—Fauchald, 1980: 806, tab. 2.

*Nothria stigmatis*.—Nonato, 1981:<sup>2</sup> 118; Temperini, 1981:<sup>1</sup> 34.

*Mooreonuphis intermedia*.—Fauchald, 1982b: 60, fig. 17e; Lana, 1984:<sup>3</sup> 155, figs. 165–168.

**Material Examined.**—CONTINENTAL SHELF (Operations Sueste I and II): St. 6077, 26°44'0"S, 48°25'8"W, 2 Aug 1982, 39 m, silty sand (MCBM-BPO-404, 1); St. 6089, 26°22'1"S, 48°19'8"W, 4 Aug 1982, 51 m, silty sand (MCBM-BPO-402, 1); St. 6092, 25°51'2"S, 48°13'3"W, 5 Aug 1982, 25 m, fine sand (MCBM-BPO-403, 1); St. 6126, 24°33'9"S, 46°20'5"W, 18 Aug 1982, 53 m, fine sand with shells (MCBM-BPO-405, 1); St. 6244, 25°55'4"S, 47°52'3"W, 17 May 1983, 50 m, silty sand (MCBM-BPO-407, 1); St. 6287, 24°38'4"S, 45°9'0"W, 31 May 1983, 88 m, silty sand with shells (MCBM-BPO-408, 1); St. 6289, 24°14'0"S, 45°56'1"W, 31 May 1983, 51 m, mud with shells (USNM 97808, 2); St. 6290, 24°6'4"S, 46°9'3"W, 31 May 1983, 35 m, sand (MCBM-BPO-409, 1).

**Remarks.**—Augener's redescription of *Onuphis intermedia* differs clearly from both the original description of Kinberg and from the material present in the type-lot, as pointed out by Fauchald (1982b). The material described by Nonato (1981)<sup>2</sup> and Temperini (1981)<sup>1</sup> as *Nothria stigmatis* Treadwell, 1922 is herein referred to *Mooreonuphis intermedia*; *N. stigmatis* is apparently restricted to North American Pacific waters. The specimens called *Onuphis fragilis* by Orensanz (1974) are also probably identical to *M. intermedia*. The species can be easily recognized by its distinctive color pattern, with reddish transverse bands on median dorsal and intersegmental grooves of anterior setigers. The origin of branchiae (varying from setigers 8–9 to 25) is rather more variable than most other members of the genus.

*Mooreonuphis lineata* new species

Figure 5a–m

**Material Examined.**—BAY OF PARANAGUÁ: St. INTGR-3, at mouth of Itiberê River, 8 May 1986, 10 m, silty sand (MCBM-BPO-434, holotype and 2 paratypes); St. INTGR-3, at mouth of Itiberê River, 8 May 1986, 10 m, silty sand (MCBM-BPO-435, 5 paratypes); St. A-3, Cotinga Island, 7 Nov 1983, 6 m, silty sand (MCBM-BPO-395, 8 paratypes; USNM 97809, 4 paratypes); St. C-11, Itiberê River, Paranaguá, 26 May 1982, 4.5 m, silty sand (MCBM-BPO-396, 1 paratype); St. D-10, Maciel River, 28 May 1982, 18 m, silty sand with shells (MCBM-BPO-397, 1 paratype); St. E-1, Ponta Norte, Peças Island, 14 Dec 1983, 6 m, silty sand (MCBM-BPO-398, 1 paratype); St. F-3, Laranjeiras Bay, 16 Dec 1983, 6 m, silty sand (MCBM-BPO-399, 1 paratype). CONTINENTAL SHELF (Operation Sueste II): St. 6226, 26°29'5"S, 48°21'4"W, 14 May 1983, 33 m, fine sand with shells (MCBM-BPO-400, 1 paratype); St. 6273, 24°46'2"S, 46°58'6"W, 28 May 1983, 36 m, silty sand with shells (MCBM-BPO-401, 1 paratype).

**Diagnosis.**—Pseudocompound tridentate hooks in the first 11 setigers; pseudo-compound and simple large median hooks from setiger 2 to setiger 22; compound spinigers from setiger 12 to setiger 22; subacicular hooks from setiger 23; branchiae from setiger 6, first as single filaments, and pectinate (up to six filaments) where best developed; ventral cirri cirriform in first 12–13 setigers.

**Description.**—The holotype is an anterior fragment with about 100 setigers, 36 mm long and 1.8 mm at the widest point (at setigers 30–35). Complete individuals were not collected; the largest fragments, with about 180 setigers, reach 65 mm in length. Anterior region iridescent; dark pigmentation bands at the lateral intersegmental grooves, throughout the body (in alcohol). Dark structures (ocelli?) ventral to the base of anterior parapodia and at the base of ceratostyles (not evident in all examined specimens). Prostomium anteriorly rounded, with a pair

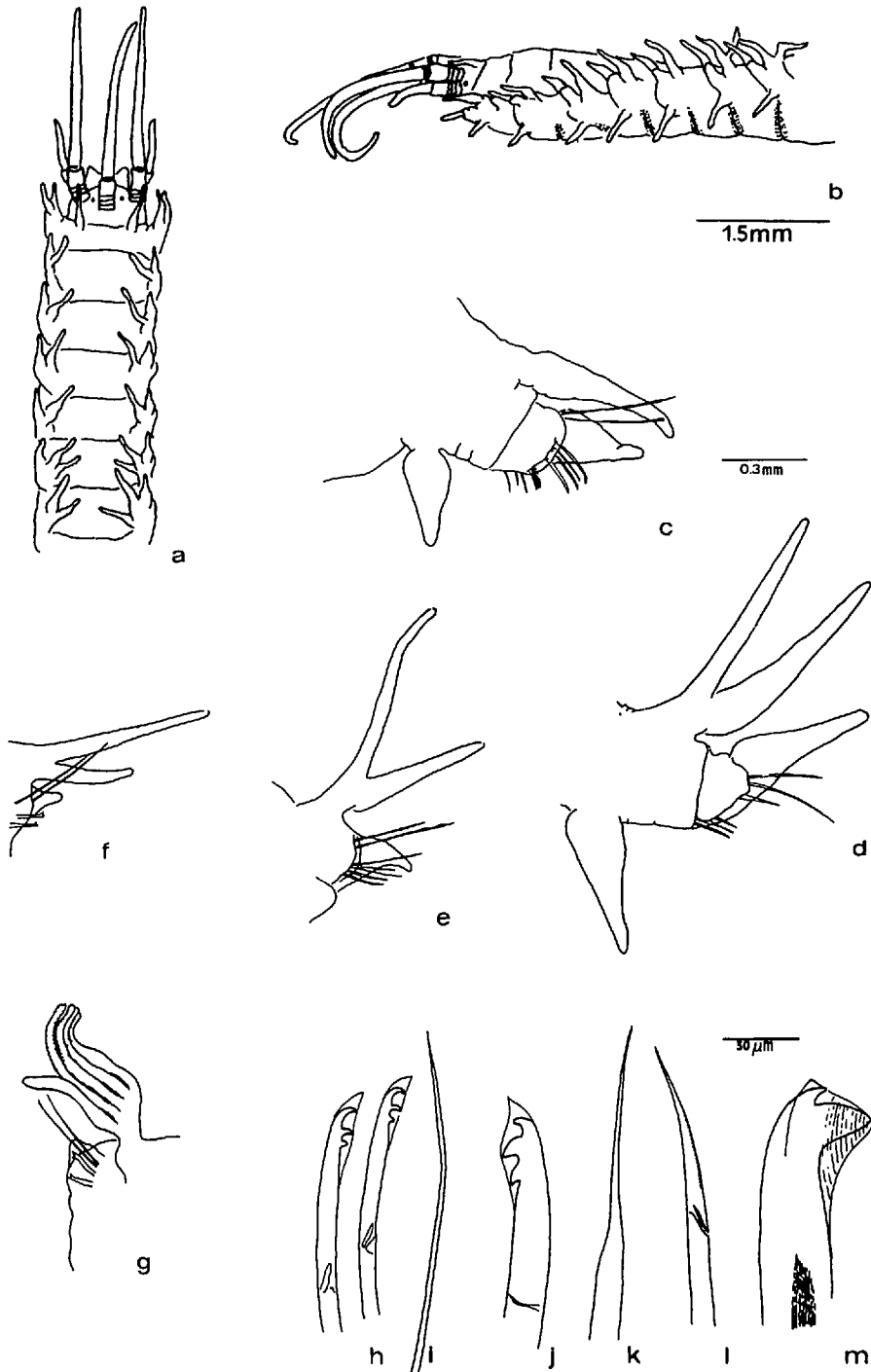


Figure 5. *Mooreonuphis lineata* n. sp. a, anterior end, dorsal view; b, anterior end, lateral view; c, parapodium 1, anterior view; d, parapodium 6, anterior view; e, parapodium 15, anterior view; f, parapodium 20, anterior view; g, parapodium 40, posterior view; h, pseudocompound tridentate hooks; i, limbate seta; j, large median hook; k, acicula; l, compound spiniger; m, subacicular hook.

of small eyespots close to the base of posterior lateral antennae (Fig. 5a). Ceratophores of antennae with two to three basal rings; ceratostyles short, the longest (median) reaching setiger 3 (Fig. 5a, b). Tentacular cirri subulate, set far apart.

Branchiae from setiger 6, first as single filaments (Fig. 5f) and pectinate (Fig. 5g), with up to six filaments where best developed (by setigers 35–40).

Dorsal cirri longer in anterior and median setigers; ventral cirri cirriform in the first 12–13 setigers. Postsetal lobes long and cirriform in the first 18–23 setigers; acicular and presetal lobes short and rounded (Fig. 5c–e).

A large number of slender pseudocompound tridentate hooks (Fig. 5h) in the first 11 setigers. Large pseudocompound median hooks (Fig. 5j) present from setiger 2 and replaced by large median simple hooks from setiger 6 to setiger 22. Hooks followed by an upper bundle of limbate setae (Fig. 5i) and projecting aciculae (Fig. 5k). Compound spinigers with short blades (Fig. 5l) from setiger 12 to setiger 22. Subacicular bidentate hooks from setiger 23 (Fig. 5m). Pectinate setae oblique, with 12–15 teeth.

Maxillae weakly sclerotized. Maxillary formula: Mx I = 1+1; Mx II = 10+10; Mx III = 9+0; Mx IV = 5+7; Mx V = 1+1.

Tube with a rigid inner lining, covered by sand grains and calcareous plates; anterior end usually protected by an entire shell.

*Etymology.*—The specific name refers to the presence of lateral pigmented bands throughout the body.

*Remarks.*—This description validates the name *lineata*, first used in a thesis (Lana, 1984).<sup>3</sup> *Mooreonuphis lineata* n. sp. can be separated from its congeners by the branchial structure and by the presence of median tridentate hooks in a larger number of anterior setigers. *Mooreonuphis lineata* n. sp. is very similar to *M. nebulosa* Moore, 1911; the two can be separated by the branchial development and by the number of modified anterior setigers. *Mooreonuphis intermedia* (Kinberg, 1865), also reported from the study area, differs clearly from *M. lineata* in that the first has branchiae always present as single filaments and a smaller number of setigers with compound spinigers.

### *Onuphis eremita oculata* Hartman, 1951

*Onuphis eremita oculata* Hartman, 1951: 52, pl. 14, figs. 1, 2; Fauchald, 1982b: 40, fig. 12b; Lana, 1984:<sup>3</sup> 158, fig. 169; Gathof, 1984: 39–27, figs. 39–25, 26a–j.

*Material Examined.*—CONTINENTAL SHELF: St. 6122, 24°51'5"S, 46°45'9"W, 18 Aug 1982, 47 m, fine sand with shells (MCBM-BPO-410, 1).

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